

CLAIMS

We claim:

1. A method for isolating infection defective hepatitis C virus (HCV) structural protein complexes from cells infected with a baculovirus encoding and expressing HCV structural proteins, comprising:
 - a) lysing the infected cells to yield a lysate;
 - b) adding polyethylene glycol to the lysate to form a precipitate that comprises the infection defective HCV structural protein complexes.
2. The method of claim 1 further comprising the step of fractionating the precipitate by gradient ultracentrifugation to provide a fraction comprising said complexes.
3. The method of claim 1 wherein the cells are lysed by incubating the cells in a buffer containing digitonin and protease inhibitors.
4. A preparation of infection defective HCV structural protein complexes prepared according to the method of claim 1.
5. A method for isolating infection defective hepatitis C virus (HCV)-like particles from cells infected with a baculovirus encoding and expressing HCV structural proteins, comprising:
 - a) lysing the infected cells to yield a lysate;
 - b) centrifuging the lysate through a cushion comprising a monosaccharide, disaccharide, or polysaccharide to provide a pellet comprising a preparation of HCV-like particles, wherein said preparation contains HCV-like particles that are heterogenous in size.
6. The method of claim 5 further comprising the step of fractionating the pellet by gradient centrifugation to provide a fraction comprising said preparation of heterogenous HCV-like particles.
7. The method of claim 5 wherein the cells are lysed by incubating the cells in a buffer containing digitonin and protease inhibitors.

8. A preparation of infection defective HCV-like particles prepared according to the method of claim 5.

9. A method for isolating infection defective hepatitis C virus-like particles from cells infected with an expression system encoding and expressing HCV structural proteins, comprising:

- a) incubating the cells in a hypertonic solution;
- b) incubating the cells in a hypotonic solution;
- c) lysing the cells to yield a lysate; and
- d) centrifuging the lysate through a cushion to provide a pellet comprising a preparation of HCV-like particles that are substantially homogeneous, wherein said HCV-like particles are approximately 50 nm in diameter.

10. The method of claim 9 further comprising the step of fractionating the pellet by gradient ultracentrifugation to provide a fraction comprising said substantially homogeneous HCV-like particles.

11. The method of claim 9 wherein the cells are lysed by incubating the cells in a buffer containing digitonin and protease inhibitors.

12. The method of claim 9 wherein the HCV-like particles comprise E1 and E2-p7 proteins of HCV.

13. The method of claim 9 wherein the HCV-like particles comprise E1 and E2 without p7 proteins of HCV.

14. A preparation of infection defective HCV-like particles prepared according to the method of claim 9.

15. A method of detecting antibodies reactive with hepatitis C virus comprising in a subject:

- a) incubating a sample from the subject with the HCV-like particles of claim 8 or claim 14;

b) assaying for the formation of complexes between antibodies in the sample and the hepatitis C virus-like particles, wherein formation of said complexes indicates that the sample contains antibodies that are reactive with hepatitis C virus.

16. A method of identifying a substance that inhibits binding of hepatitis C virus to its host cells comprising:

a) contacting cells capable of binding hepatitis C virus with a candidate substance;

b) incubating the cells with the HCV-like particles of claim 8 or claim 12, and

c) assaying for a reduction in binding of the HCV-like particles to the cells in the presence of the candidate substance, wherein a candidate substance that reduces binding of the HCV-like particles to the cells is capable of inhibiting binding of HCV to the host cells.

17. A method for treating a subject exhibiting symptoms of HCV infection comprising administering to the subject a substance that interferes with binding of the HCV-like particles of claim 8 or claim 14 to cells.

18. The method of claim 17 wherein the substance is an antibody that is immunoreactive with the asialoglycoprotein receptor.

19. The method of claim 17 wherein the substance is thyroglobulin.

20. A kit for detecting hepatitis C virus, antibodies reactive with hepatitis C virus, or substances that interfere with binding of hepatitis C virus to cells comprising:

a) cells transfected with one or more expression systems encoding and expressing one or more receptors to which hepatitis C virus is capable of binding; and

b) one or more preparations selected from the group consisting of the preparation of claim 4, the preparation of claim 8, the preparation of claim 14.

21. The kit of claim 20 wherein the cells are transfected with an expression system encoding an asialoglycoprotein receptor.

22. A method of inducing production of antibodies immunoreactive with HCV in an animal, comprising administering a preparation selected from the group consisting of the preparation of claim 4, the preparation of claim 8, and the preparation of claim 14, or a combination of said preparations to the animal.